

REMARKS

Claims 1-19 were pending in the above-identified patent application and were rejected in a Final Office Action dated October 6, 2005. Applicants responded to the Final Office on December 6, 2005 and received an Advisory Action dated December 28, 2005. Applicants now request entry of the amendments set forth in the Applicants' response dated December 6, 2006 and request continued examination of the claims as amended above.

The Final Office Action contained an objection to the drawings, and in the response dated December 6, 2005, Applicants amended the specification and Fig. 1 to address the objection. The Advisory Action indicated that the amendments in Applicants' response would be entered for the purposes of appeal but did not specifically address the objection to the drawings. Accordingly, Applicants request reconsideration and withdrawal of the objection to the drawings.

Claims 1, 6, 7, 10, 14, 17, and 18 were rejected under 35 U.S.C. § 102(b) as anticipated by U.S. Pat. No. 5,883,988 (Yamamoto). Applicants respectfully traverse the rejection.

Independent claim 1 distinguishes over Yamamoto by reciting, "a sub-mount containing conductive traces exposed at a first surface of the sub-mount; a die mounted on the sub-mount and containing an edge-emitting laser that is electrically coupled to the conductive traces; and a reflector positioned to reflect an optical signal from the edge-emitting laser through the first surface and through the sub-mount." Yamamoto fails to disclose or suggest mounting a die containing a laser on a sub-mount that includes electrical traces and still permits transmission of an optical signal. Further discussion of Yamamoto can be found in Applicants' prior response to the Final Office Action.

In the Advisory Action, the Examiner specifically noted Fig. 25 of Yamamoto and identified the combination of support substrate 1 and waveguide 13 as corresponding to the sub-mount of claim 1. Fig. 25 illustrates an optical module 321 having an input light path through waveguide 13 to a photoreception device 421 on support substrate 1. However, Yamamoto does not teach or disclose directing an optical signal through a surface of a sub-mount containing traces.

The Advisory Action in discussing Fig. 25 of Yamamoto further stated "Although there is a 90 degree bend, ... the examiner does not consider this to be a patentable distinction." However, Yamamoto requires this 90° bend because Yamamoto teaches

directing optical signals through a waveguide, and the waveguide 13 is added on top of the support substrate 1. Yamamoto fails to provide any suggestion of directing optical signals through the surface at which conductive traces in a sub-mount are exposed.

Further, Fig. 25 of Yamamoto shows an optical path for a photoreception device 421 where the input beam reaches a surface parallel to the major surface of device 421. Yamamoto does not suggest that such a beam path would be desirable or appropriate for an edge-emitting laser as recited in claim 1. Accordingly, claim 1 is patentable over Yamamoto.

Claims 6, 7, and 18 depend from claim 1 and are patentable over Yamamoto for at least the same reasons that claim 1 is patentable over Yamamoto.

Claim 6 further distinguishes over Yamamoto by reciting, “the reflector comprises a portion of an inner wall of a cavity in a cap overlying the die.” In the Advisory Action, the Examiner repeated the identification of reflective coating 15 as being a cap. However, reflective coating 15 is not a cap. This is not a matter of Applicants’ lexicography but the ordinary meaning of words as understood by those of skill in the art. Further, Yamamoto provides no indication that reflective coating 15 defines a cavity with an inner wall. Accordingly, claim 6 is patentable over Yamamoto.

Independent claim 10 distinguishes over Yamamoto at least by reciting, “mounting a die containing a laser on a surface of a sub-mount; electrically connecting the laser to electrical traces in the sub-mount; and attaching a reflector to the sub-mount in a position such that an optical signal from the laser is reflected through the sub-mount.” As noted above, Yamamoto teaches directing light into a device substrate containing a photoreception device that absorbs the light and the reflectors in Yamamoto are integrated in the photoreception device. Further, Yamamoto does not suggest mounting a laser on the sub-mount into which the light is directed, but instead, Yamamoto teaches mounting on a support substrate 1, which is not used for light flow. Accordingly, claim 10 is patentable over Yamamoto.

Claims 14 and 17 depend from claim 10 and are patentable over Yamamoto for at least the same reasons that claim 10 is patentable over Yamamoto.

Claim 17 further distinguishes over Yamamoto by reciting, “the reflector reflects the optical signal through the surface on which the die is mounted.” Yamamoto fails to suggest an optical signal passing through a surface on which a die containing a light source is mounted.

For the above reasons, Applicants request reconsideration and withdrawal of the rejection under 35 U.S.C. § 102.

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Claims 2, 11, and 19 were rejected under 35 U.S.C. § 103(a) as unpatentable over Yamamoto in view of U.S. Pat. No. 5,195,156 (Freeman). Applicants respectfully traverse the rejection.

Claims 2 and 19 depend from claim 1, and claim 11 depends from claim 10. As indicated above, independent claims 1 and 10 are patentable over Yamamoto at least for the reasons given above. The Examiner cites Freeman as disclosing an alignment post. However, such a disclosure by Freeman would not affect the above reasons for claims 1 and 10 being patentable. Accordingly, independent claims 1 and 10 and dependent claims 2, 11, and 19 are patentable over the combination of Yamamoto and Freeman.

Claim 2 further distinguishes over the combination of Yamamoto and Freeman by reciting, “an alignment post attached to the sub-mount where the optical signal emerges from the sub-mount.” Yamamoto fails to disclose or suggest alignment structures. Freeman is directed to an optical fiber connector assembly with no specified relationship to a sub-mount. Yamamoto and Freeman whether considered separately or in combination fail to suggest any alignment structure attached to a sub-mount on which a laser is mounted and particularly fails to suggest an alignment post attached “where the optical signal emerges from the sub-mount” as recited in claim 2.

Claims 11 and 19 further distinguish over the combination of Yamamoto and Freeman by respectively reciting, “attaching an alignment post to the sub-mount where the optical signal emerges,” and “an alignment post attached to a second surface of the sub-mount where the optical signal emerges from the sub-mount.” As noted in regard to claim 2, Yamamoto and Freeman fail to disclose or suggest an alignment post mounted where an optical signal emerges from a sub-mount on which a laser die is mounted.

For the above reasons, Applicants request reconsideration and withdrawal of this rejection under 35 U.S.C. § 103.

Claims 3-5 were rejected under 35 U.S.C. § 103(a) as unpatentable over Yamamoto. Applicants respectfully traverse the rejection.

Claims 3-5 depend from claim 1 and are patentable over Yamamoto for at least the reasons given above to show that claim 1 is patentable over Yamamoto. Accordingly, Applicants request reconsideration and withdrawal of the rejection under 35 U.S.C. § 103.

Claims 8, 9, 12, and 13 were rejected under 35 U.S.C. § 103(a) as unpatentable over Yamamoto in view of U.S. Pat. App. Pub. No. 2001/0023920 (Ando). Applicants respectfully traverse the rejection.

Claims 8 and 9 depend from independent claim 1, which is patentable over Yamamoto for at least the reasons given above. The Examiner cites Ando for disclosing encapsulation of optical devices using transparent material such as silicone. However, such teaching does not provide the elements of claim 1 that are missing from Yamamoto. Accordingly, claims 8 and 9 are patentable over the combination of Yamamoto and Ando.

Similarly, claim 12 and 13, which depend from claim 10, are patentable over the combination of Yamamoto and Ando for at least the same reasons that independent claim 10 is patentable over Yamamoto.

For the above reasons, Applicants request reconsideration and withdrawal of this rejection under 35 U.S.C. § 103.

Claims 15 and 16 were rejected under 35 U.S.C. § 103(a) as unpatentable over Yamamoto in view of U.S. Pat. No. 5,822,352 (Mizutani). Applicants respectfully traverse the rejection.

Claims 15 and 16 depend from claim 10, which is patentable over Yamamoto for at least the reasons given above. The Examiner cites Mizutani for teaching crystal growth of multiple laser structures on a wafer. However, such teaching when considered in combination with Yamamoto does not affect the reasons for the patentability of independent claim 10. Accordingly, independent claim 10 and dependent claims 15 and 16 are patentable over the combination of Yamamoto and Mizutani, and Applicants request reconsideration and withdrawal of this rejection under 35 U.S.C. § 103.

New claim 20 depends from claim 1 and is patentable for at least the same reasons that claim 1 is patentable.

In summary, claims 1-19 were pending in the application. This submission amends claims 1, 3, and 18 and adds claim 20. For the above reasons, Applicants respectfully request withdrawal of the final rejection and allowance of the application including claims 1-19.

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